Risky Health Behaviors and Behavioral Differences of the U.S. Youth: Quasi Evidence with Empirical Study: Policy Implications

Trevor Carr, Department of Economics
Hieu Tran, Department of Economics
Faculty Advisor: Tetsuji Yamada
Although it is illegal to drink and drive in the U.S., forty-five percent of the traffic accidents among the age group of 14~18 are alcohol related. Alcohol is a leading factor in deaths related to motor vehicle accidents.

- Use of alcohol, tobacco, cocaine and other illicit drug use by the youth
- Loss of Human Resources
Objectives: Challenge and contributions

We evaluate and examine the relationship between alcohol and illicit drug use by the youth and Three Types of violent risky behaviors:

❖ Drunk driving,
❖ Riding in a car driven by someone who has been drinking, and
❖ Not wearing seatbelts.
Figure 1: Structural Implication

Loss of Human Resources → Traffic Accidents → Risky Health Behaviors

- No-Seatbelt use
- Violent Risky Behaviors
- Companion Rider
- Drunken Driving

Social Factors
Demographic factors
Economic factors
Method: Empirical Structural Model

❖ The following equations describe the basic three models of analysis:

1) Drunk Driving \([DD]_i = \alpha_0 + \alpha_1 VBF_i + \alpha_2 RHB_i + \alpha_3 SEF_i + \alpha_4 DF_i + \varepsilon_i \ldots[1].\)

2) Companion Rider \([CR]_i = \beta_0 + \beta_1 VBF_i + \beta_2 RHB_i + \beta_3 SEF_i + \beta_4 DF_i + \phi_i \ldots[2].\)

3) Not Wearing Seatbelt \([NSB]_i = \gamma_0 + \gamma_1 VBF_i + \gamma_2 RHB_i + \gamma_3 SEF_i + \gamma_4 DF_i + \upsilon_i \ldots[3].\)

VBF: violent risky behaviors; RHB: risky health behavior; SEF: socioeconomic factors; DF: demographic factors; \(\varepsilon, \phi\) and \(\upsilon\): error terms.
Equations 1, 2 and 3 represent:

- The relationship between **the violent risky behavioral choice** of individual “i”, e.g. drunken driving [DD], riding in a car driven by someone who has been drinking [CR], not wearing seatbelt [NSB], and **risky health behavior** [RHB] e.g. binge drinking, smoking, marijuana, cocaine, and drink & drug.

- This research defines use of alcohol, tobacco, cocaine and other illicit drug use as **risky health behavior**.
Method and Data [2]

• The data used for this project is drawn from the 1992 [16296 samples] and 2017 [14684 samples] National Youth Risk Behavior Survey to examine the behavioral difference between two periods.

• Nationally representative sample of children and youth [12~22 years old] in the fifty states and the District of Columbia in the United States.
**Method and Data [3]**

➢ **Statistical analysis** includes socio-economics factors and demographic factors in an extended PRECEDE-PROCEED model **[behavioral theoretical framework]** in Figure 2 to observe influential determinants.

➢ Multiple-regression statistical analyses are used to conduct and examine **effects of** risky health behaviors [drinking and illicit drug use], socio-economics factors and demographic factors on **violent risky behaviors** [1: drunken driving, 2: companion rider in drunken driver, and 3: not wearing seatbelt while driving].
Extended Application of PRECEDE-PROCEED Model

**Phase 1&2**
Quality-of-life Assessment

**Phase 3**
Behavioral Choices Assessment

**Phase 4**
Behavioral Factors Assessment

**Phase 5**
Policy Assessment

**Phase 6**
Implementation of Policy and Regulation: Evaluation

**Phase 7**
Impact and Behavioral Evaluation

**Phase 8**
Outcome Evaluation

- Minimum age of drinking and smoking
- Taxes on cigarettes and liquor
- Risky health behavioral factors
- Socio-economic factors
- Demographic factors

Violent risky behavioral Driving

Quality of life: Children and Youth
Behavioral relation among children and youth [12~22 years old]

- Drunken driving → Companion ride
- Drunken driving → Non-seatbelt use
- Companion ride → Drunken driving
- Companion ride → Non-seatbelt use
- Non-seatbelt use → Drunken driving
- Non-seatbelt use → Companion ride

- Regarding children and youth behaviors, there are positively associated relation about violent risky behaviors.
Regression Results: Risky health Behaviors on Violent Risky Behaviors children and youth [12~22 years old]

1) Excess drinking ➡️ Drunken driving ➡️
2) Smoking cigarette ➡️ Drunken driving ➡️
3) Marijuana use ➡️ Drunken driving ➡️
4) Illicit drug use ➡️ Drunken driving ➡️
5) Drinks and Drugs ➡️ Drunken driving ➡️

- Excess drinking, Smoking cigarette, Marijuana use, Illicit drug use, and Drinks & Drugs have influences on “Violent Risky Behaviors” positively.
Quantitative Evaluation: Risky health Behaviors on Violent Risky Behaviors children and youth [12~22 years old]

**Effects: Seatbelt use**
- Excess Drinking $\uparrow$ => 21% decrease in “Seatbelt use”
- Smoking cigarette $\uparrow$ => 28% decrease in “Seatbelt use”

**Effects: Companion ride**
- Excess Drinking $\uparrow$ => 153% increase in “Companion ride”
- Smoking cigarette $\uparrow$ => 115% increase in “Companion ride”

**Effects: Drunken driving**
- Excess Drinking $\uparrow$ => 200% increase in “Drunken driving”
- Smoking cigarette $\uparrow$ => 120% increase in “Drunken driving”
Empirical Results: Other interesting factors on Violent Risky Behaviors children and youth [12~22 years old]

Effect of Socio-demographic factors:

- Grade performance $\rightarrow$ Seatbelt use
- Grade performance $\rightarrow$ Companion ride
- Grade performance $\rightarrow$ Drunken driving

Female compared to Male
- Impact of Female $>$ Male is greater: Seatbelt use
- Impact of Female $>$ Male is greater: Companion ride
- Impact of Female $>$ Male is greater: Drunken driving
Disparity of Drunken Driving

<table>
<thead>
<tr>
<th>Influential factor on Drunken Driving</th>
<th>Concentration index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of Drinks [QD]</td>
<td>0.157</td>
</tr>
<tr>
<td>Many types of drinks [MD]</td>
<td>0.062</td>
</tr>
<tr>
<td>Drinks and Drugs [DD]</td>
<td>0.033</td>
</tr>
</tbody>
</table>

- Statistically significant levels are not presented.
- QD is disproportionally concentration of drunken driving behaviors than MD and DR.

Cumulative % of population ranked by Drunken Driving Behaviors

Cumulative % of QD, MD and DD
This study incorporates “Violent Risky Behaviors: drunken driving; companion ride; and non-seatbelt use” and “Risky Health Behaviors: binge drinking, smoking cigarette, marijuana use, and illicit drug use” to evaluate the effects of driving behavior among children and youth [12~22 years old].

The result of the regression outcomes reveal that “Risky Health Behaviors” are positively associated with “Violent Risky Behavior, i.e. driving behavior”.

“Drunken driving”, “Companion rid”, and “Non-seatbelt use” are positively associated each other.
Implication and Conclusion [2]

- The result of the concentration index reveals that “An increase in “quantitative drinking” is heavily and disproportionately concentrated on “of drunken driving behaviors” than “many types of drinking” and “a combined drug use and alcohol intake”.

- An important contribution to the literature is that we integrate the analysis with the finding that “drunken driving”, “companion ride”, and “non-seatbelt use” are all positively associated with each other.

- Females are less risker behaviors than male among children and youth [12~22 years old]. Females are more likely to follow the regulations than males.
Implication and Limitation

- For **policy implications**, loss of human resources by the young age due to traffic accidents needs to be prevented. Health education about smoking cigarettes are use of illicit drug use are imperative and a viable option at early educational age. Thus, “Health education” improves their quality of lives, prevents their loss of earning in their future, and maintain their daily life to maintain quality.

**Limitation:** the **1992 [16296 samples]** National Youth Risk Behavior Survey have the rich and useful information for analyses. However, **2017 [14684 samples]** National Youth Risk Behavior Survey does not contain some socio-demographic and geographic information which does not allow us to evaluate useful policy evaluation, e.g. tax and regulation effects.
Thank you very much.

Trevor Carr, Department of Economics:
\texttt{tac249@scarletmail.rutgers.edu},
Hieu Tran, Department of Economics:
\texttt{ht259@scarletmail.rutgers.edu},
Faculty Advisor: Tetsuji Yamada, Ph.D.:
\texttt{ytetsuji@aol.com} and \texttt{tyamada@rutgers.edu}